REMARKS

Prior to the current amendments, the application contained claims directed to a system and method for loading molten material (33-38 and 41-45) and claims directed to a probe for use in such a system (24-27 and 29-32).

In the October 26, 2010 Office Action, the claims which relate to the system and method for loading molten material were allowed. Such claims remain pending in the application and have not been amended in this Amendment.

Claims which relate to the probe were rejected as obvious over Hasselmann U.S. patent No. 4,672,842 in combination with Evans U.S. patent No. 3,716,417 and Gearing U.S. patent No. 3,205,709. By the foregoing amendments, such claims are cancelled.

New independent claim 47 and dependent claims 48-59 are directed to the system for loading molten material, defining the system from a different perspective. More particularly, independent claim 47 recites a system for loading molten material from a loading pipe (e.g., 22) into the interior of a container (e.g., 16). A probe (e.g., 10) is at least partially inside the container and includes a plurality of vertically spaced temperature sensing devices (e.g., 18) for producing electrical signals which vary as a function of sensed temperature such that, as molten material is discharged into the interior of the container, the temperature sensing devices at vertically increased heights come into thermal contact with the molten material.

A processor system located outside of the container is electrically coupled to the temperature sensing devices. The processor system is programmed to calculate a value representing the current volume or level of molten material within the container based on physical properties of the container (which may be pre-stored in memory (or potentially entered

by the user prior to filling the container)) in combination with electrical signals from the temperature sensing devices.

Finally, an external device, e.g., a display, is coupled to the processor to provide an indication to a user of the current volume or level of molten material within the container. This allows the user monitor the filling process and, if an automatic shutoff valve is not provided, manually close the shutoff valve (or turn off a pump, etc.) when the container reaches the desired capacity.

Dependent claim 48 recites that the external device is a visual display. As disclosed in the specification, the filling process may be displayed in various formats such as volume amount, volume as a percentage of capacity, the level of molten material, remaining capacity, etc. See, e.g., paragraphs [0031], [0053] and [0054] of US 2007/0251960.

Dependent claim 49 recites that the processor system controls an electrically controlled shutoff valve upon reaching a predetermined volume or level of molten material within the container.

Dependent claim 50 recites that the processor system monitors electrical signals from the temperature sensors and determine whether at least one shutdown condition has occurred. The processor system is programmed to close the shutoff valve in response to determining that a shutdown condition exists.

Claim 51, which depends from claim 50, further recites that each temperature sensing device individually sends output signals to the processor, and that the processor system is programmed to determine the existence of a shutdown condition when the temperature of a temperature sensing device at a first vertical position is higher than the temperature of at least

one temperature sensing device at a second vertical position which is lower than said first vertical position, indicating that sulfur solidification may have occurred.

Dependent claim 52 recites that the system of claim 47 is designed to be used with a container which is part of a vehicle, e.g., a steam-jacketed tank truck. See paragraph [0001]. In the system recited in claim 52, the loading pipe is selectively moveable from a delivery position in which said outlet is located in the interior of the container (as shown in Fig. 1) and a non-delivery position in which the outlet is located outside of the container (which is inherent – paragraph [0001] discloses that the tank truck transports the molten sulfur to a sulfur pit; after filling, the hatch opening 26 could not be closed, and the truck could not travel to the sulfur pit, unless the probe 10 and loading pipe 22 are moved to a position outside of the container).

Claim 53, which is dependent on claim 52, recites an embodiment in which the probe is mechanically coupled to the loading pipe for movement with said loading pipe such that, when said probe is in said first position said delivery pipe is in said non-delivery position, and such that, when said probe is in said second position said loading pipe is in said delivery position. This mechanical coupling is indicated schematically in Figure 1 as element 24.

Dependent claim 54 is directed to the embodiment of Figure 5, in which the termperature sensing devices are connected in series. In the exemplary embodiment, the processor outputs an operating voltage to the lowermost sensing device and receives the output signal from the uppermost sensing device (which output signal will vary depending upon how many of the sensing devices are in contact with the molten sulfur).

Dependent claims 55-57 recite that the processor system is programmed for loading molten sulfur into an insulated container such that a vapor zone forms over the molten sulfur.

All of the exemplary embodiments in the specification are directed to a molten sulfur loading system.

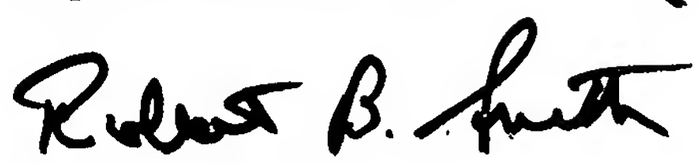
Dependent claim 58 recites the system of claim 47, further comprising an input device to allow a user to select and input information concerning the type of container to be filled. The processor system is programmed to receive information entered into the input device and select stored physical properties relating to the selected container type. See, e.g., paragraphs [0014], [0052] - [0054].

Finally, dependent 59 recites the additional feature that the structure of the probe prevents the probe from falling completely into the molten material. See, e.g., paragraph [0039].

In sum, the new claims recite a system in which a processor is programmed to monitor the filling process to provide at least an indication to the user that the container is reaching, or has reached, capacity. Preferably, the system includes a shutoff valve automatically closed by the processor when the container has reached the desired capacity. Other claims recite the additional feature that the processor monitors the temperature sensor signals to determine when a shutdown condition arises for automatic shutdown before the pumps or other equipment are damaged.

The art cited against the probe claims (which have now been cancelled) does not show or suggest a system as recited in new claims 47-59. For such reasons, the applicant respectfully requests favorable consideration and allowance of newly added claims.

Respectfully submitted,



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